Amendments to the claims:

Please cancel claims 1-38 and add new claims 61. This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-38. (canceled)

39. (New) Surgical instrument (51) adapted to cardiac surgery, and in particular to atrial defibrillation comprising insertion means for insertion inside the heart chamber (100), and cutting means (50) connected at a connection zone (540) to said insertion means, for creating lesions inside the heart chamber (100), said instrument (51) being such that both its translation and rotation movements are controlled by a robotic system (300) preferably coupled to a 3D-imaging system (400),

wherein the insertion means correspond to a rigid elongated stem (52) delimited by an outer wall (521), with a main axis (A), and having a proximal end (523) and a distal end (522), said proximal end (523) being connected to the robotic system (300), while the distal end (522) is free;

and wherein the cutting means comprise a flexible spreadable support structure (510) with an inner surface (511) and an outer surface (512), and an electrode mesh or network (500,500',500'',...) arranged on the outer surface (512) of said support structure (510).

40. (New) The instrument according to claim 39, wherein the spreadable support structure (510) corresponds to a dome structure having a tip (531) and a base (532), said base

(532) being free and said tip being connected at the connection zone (540) to the outer wall (521) of the stem (52).

41. (New) The instrument according to claim 40, wherein the dome structure (510) is subdivided into dome sections able to selectively adopt a rest configuration for which all the dome sections are folded up along the outer wall (521) of the stem (522) and a plurality of working configurations for which at least one dome section selectively spreads from the stem (52) according to a spreading angle (S) defined by the main axis (A) of the stem (52), the connection zone (540) and the base (521) of the dome structure (510).

42. (New) The instrument according to claim 40, wherein the electrode mesh or network comprises a plurality of parallel electrodes (500,500',500'',...) arranged both radially and circularly on the outer surface (512) of said dome structure (510), and activable selectively by the robotic system (300).

43. (New) Method for performing an atrial defibrillation using the instrument (51) according to claim 47, comprising the following steps:

- making a small incision in the thoracic wall (80) of the patient so as to introduce guiding means (1) inside the patient's cavity until the outer surface of the heart chamber, whereon said guiding means (1) are placed;
- stabilising said guiding means (1) by attaching them to an immobile surface such as a surgical table (7);

- under the control of the robotic system (300), passing the instrument (51) through said guiding means (1) by its distal end, with the dome structure (510) in rest configuration, until said instrument reaches the heart chamber and penetrates inside the heart chamber;
- positioning the instrument (51) inside the heart chamber relatively to the atrial wall and following a predefined sequence of translation and rotation movements of the stem (52) and of the dome structure (510) corresponding to a sequence of working configurations for the dome structure (510);
- coupling said sequence with a predefined activation sequence wherein different electrodes (500,500',500'',...) of the electrode network are selectively activated, so as to create selective lesions at precise locations in the atrial wall, said lesions being able to stop the electrical impulses associated to atrial fibrillation.

44. (New) The method according to claim 43, wherein a surgical protocol is pre-established by taking a series of 3D images of the heart with the 3D-imaging system (400) and treating said images with the robotic system (300) so as to predefine the sequence of rotations and translations to give to the instrument (51) as well as the activation sequence of the electrodes (500,500',500'') in the electrode network.

45. (New) The method according to claim 43, wherein the 3D-imaging system (400) coupled to the robotic system (300) takes a series of 3D-images as a function of time, preferably in real time, thereby allowing a monitoring of the surgical procedure.

46. (New) Surgical instrument (81) adapted for hepatic surgery and comprising insertion means for insertion inside a target organ, and heating means for coagulating specific tissue regions inside said target organ, said heating means being connected to said insertion means, said instrument (81) being capable of translation and rotation movements controlled by a robotic system preferably coupled to a 3D-imaging system and being adapted for intra-hepatic surgery.

47. (New) The instrument according to claim 46, wherein the insertion means correspond to a rigid elongated rod (82) with a main axis (B), a centre of gravity (O), a proximal end (820) and a distal end (821), said proximal end (820) being connected to the robotic system, while the distal end (821) is free.

48. (New) The instrument according to claim 46, wherein the heating means comprise at least (i) a secondary rigid rod (83) articulated on the main rod (82) via connection means (84) and provided with a main axis (B'), a proximal end (830) and a distal end (831), and (ii) at least one electrode (85,85',86,87) activable by the controlling means, preferably by radiofrequency.

49. (New) The instrument according to claim 46, wherein the heating means comprise at least one bipolar electrode (87), articulated on the main rod (82) via connection means (84,84'), preferably consisting of one first needle (870) and a second needle (871), each of said needle (870,871) being defined by a main axis (B'',B'''), and activable by the controlling means, preferably by radiofrequency.

50. (New) The instrument according to claim 50, comprising two primary monopolar electrodes (85,85') which are at least part of the secondary rod (83) and are activable selectively by the controlling means, preferably by radiofrequency.

51. (New) The instrument according to claim 48, further comprising at least one secondary monopolar electrode arranged at the distal end (821) of the main rod (82) and activable selectively from said primary electrodes (85,85') or said bipolar electrode (87).

52. (New) The instrument according to claim 46, wherein the main rod (82) possesses six degrees of freedom, four of them being able to be blocked in operating conditions by the controlling means so as to allow only two degrees of freedom, one translation along and one rotation around its main axis (B).

53. (New) The instrument according to claim 46, wherein the secondary rod (83) has its main axis (B') parallel to the main axis of the main rod (82) and presents two degrees of freedom, one translation along and one rotation around its main axis (B') so that the height and the distance of the secondary rod (83) relatively to the main rod (82) can be adjusted by the controlling means, the distance being adjustable at a value varying from O to a maximum value.

54. (New) The instrument according to claim 46, wherein the bipolar electrode (87) presents different degrees of freedom, one rotation around their main axis (B'',B''') for each of said first and second needles (870,871) and one translation along said axis (B'',B''') so that the

distance of the needles (870,871) relatively to the main rod (82) can be adjusted by the controlling means, said distance being adjustable at a value varying from O to a maximum value.

55. (New) The instrument according to claim 46, said instrument (81) being able to adopt one rest configuration and at least one working configuration, each of said configurations being defined by a different relative position of the insertion means and/or the heating means, the instrument being not functional in rest configuration but being functional in working configuration.

56. (New) The instrument according to claim 55, wherein when in rest configuration, the secondary rod (83) or the bipolar electrode (87) is folded up inside the main rod (82) (distance main rod (82)/secondary rod (83) or main rod (82)/bipolar electrode (87) equal to 0), and all the electrodes (85,85',86) are unactivated.

57. (New) The instrument according to claim 55, wherein in a working configuration, the secondary rod (83) spreads out from the main rod (82), its main axis (B') being parallel to the one (B) of the main rod (82) and distanced to it of a certain distance greater than 0 and at least of the electrode (85,85',86) is activated.

58. (New) The instrument according to claim 55, wherein in a working configuration, the bipolar electrode (87) spreads out from the main rod (82), the main axis (B'',B''') for each of said first and second needles (870,871) being parallel to the main axis (B) of the main rod (82)

and distanced to it of a certain distance greater than 0 and at least of the electrode (87,86) is activated.

59. (New) A method for coagulating an intra-hepatic tumour of a certain shape, using the instrument according to claims 46, comprising the following steps:

- making a small incision in the abdominal wall of the patient so as to introduce guiding means inside the patient's cavity until the outer surface of the liver, whereon said guiding means are placed;
- stabilising said guiding means by attaching them to an immobile surface such as a surgical table;
- under the control of the robotic system, passing the instrument through said guiding means by its distal end, with the instrument in rest configuration, until said instrument reaches the liver and penetrates inside the hepatic parenchyma;
- positioning the instrument inside the hepatic parenchyma relatively to the hepatic wall and following a predefined sequence of translation and rotation movements of the main rod and the secondary rod corresponding to a sequence of working configurations;
- coupling said sequence with a predefined activation sequence wherein different electrodes of the electrode network (first and second electrodes) are selectively activated, so as to lead to a tissue coagulation at precise target locations in the liver corresponding to tumour tissues.

60. (New) The method according to claim 59, wherein a surgical protocol is pre-established by taking a series of 3D images of the liver and of the tumour with the 3D-imaging system and treating said images with the robotic system so as to predefine the sequence of

rotations and translations to give to the instrument as well as the activation sequence of the electrodes in the electrode network.

61. (New) The method according to claim 59, wherein the 3D-imaging system coupled to the robotic system takes a series of 3D-images as a function of time, preferably in real time, thereby allowing a monitoring of the surgical procedure.